[Document Type] Abstract

The energy conversion efficiency from light that is to be converted to converted light of a wavelength conversion device is adjusted so as always to be kept stably at a maximum. The wavelength conversion device is provided with a laser light source 10 for generating a fundamental wave light, a nonlinear optical crystal 16 into which the fundamental wave light is made to enter to generate converted light, and an optical path adjusting portion 30 for adjusting the direction of propagation of the fundamental wave light and the position of the light beam of the fundamental wave light in order to make the fundamental wave light enter the nonlinear optical crystal 16 while satisfying phase matching conditions. The optical path adjusting portion 30 is constituted so as to be provided with a first reflecting mirror 12 and a second reflecting mirror 14, and the first reflecting mirror is provided with adjustment means driven by motors M1 and M2, and the second reflecting mirror is provided with adjustment means driven by motors M3 and M4. Additionally, the wavelength conversion device is provided with a semi-transparent mirror 18 for splitting off and taking out one portion of output light 17, and a photodetector 22 for detecting this split off output light. An electrical signal 23 that is output from the photodetector 22 is input into an adjustment value calculating means 26, and in this adjustment value calculating means, the necessary adjustment values for the adjustment means in the optical path adjusting portion 30 are calculated using fuzzy inference, and this result is output to an optical path adjusting portion control device 28. The optical path adjusting portion control device 28 carries out adjustment of the optical path based upon output signals 27 from the adjustment value calculating means 26.